STAFF REPORT

MANUAL OF PROCEDURES, VOLUME III
LABORATORY METHODS

EXECUTIVE SUMMARY

Amendments to the Manual of Procedures, Volume III, Laboratory Methods are being proposed either because they are required for the enforcement of amended regulations or in order to incorporate advances in analytical equipment. Method 44A will save staff time and increase the sensitivity of Method 44, which determines the concentration of reduced sulfur gases and sulfur dioxide in effluent samples that may be subject to Regulation 7: Odors or Regulation 9, Rule 1: Sulfur Dioxide. Method 45 will measure butanes and pentanes in polymeric materials subject to the standards of newly adopted Regulation 8, Rule 52: Polystyrene, Polypropylene and Polyethylene Foam Product Manufacturing Operations. Method 46 will be used to determine the volatile organic compounds (VOC) in cleaning compounds used in the graphic arts industry from which vapor pressures can be calculated to determine compliance with new standards in Regulation 8, Rule 20: Graphic Arts Printing and Coating Operations.

There are no economic impacts associated with the adoption of these amendments to the Manual of Procedures. Sections 40728.5 and 40920.6 of the California Health and Safety Code, regarding socioeconomic impact analyses and incremental cost effectiveness analyses are not applicable to this proposal.

Pursuant to the California Environmental Quality Act, there are no environmental impacts from this proposal and the District intends to file a Notice of Exemption pursuant to state CEQA guidelines. Section 40727.2 of the California Health and Safety Code, regarding regulatory impact analyses is not applicable to this proposal. Impacts on District staffing and resources are small, but necessary to enforce adopted regulatory standards. Affected public have been given an opportunity to comment on the proposal, and staff recommend adoption of the proposed amendments.

BACKGROUND

Laboratory Methods are contained in the District's Manual of Procedures (MOP). Changes to the MOP are adopted by the Board of Directors at a public hearing and become part of the District's portion of the California State Implementation Plan (SIP). The Clean Air Act requires public notice of SIP submissions, just as California law requires public notice of hearings regarding rule amendments. Although the laboratory procedures are not regulatory standards, they do operate as the means of enforcement of the regulatory standards, and consequently, the accuracy and precision of the test methods define the stringency to which the regulatory standards can be enforced.

The Manual of Procedures contains methodology for enforcing standards throughout District rules. It is subdivided into six sections, Enforcement Procedures, Engineering Permitting Procedures, Laboratory Methods, Source Test Policy and Procedures, Continuous Emission Monitoring Policy and Procedures and Air Monitoring Procedures. Although highly technical, proposed amendments to procedures and methods are distributed to the public to comment on prior to a public hearing to consider adoption. A public hearing gives the Board the opportunity to consider any comments by affected members of the public regarding the stringency and accuracy of the proposal.

DESCRIPTION OF LABORATORY METHODS

- **Method 44A: Determination of Reduced Sulfur Gases and Sulfur Dioxide in a Gaseous Matrix Using the Sulfur Chemiluminescence Detector.** Effluent samples containing reduced sulfur gases and sulfur dioxide collected in Tedlar bags, Teflon bags or "SiloCan" canisters are analyzed using a gas chromatograph fitted with a sulfur chemiluminescence detector (SCD). The detection of reduced sulfur gases by the SCD involves combustion of the gases in a hydrogen-rich chamber yielding sulfur monoxide. The sulfur monoxide is reacted with ozone, producing sulfur dioxide, oxygen and light. The light produced is detected by a photomultiplier tube and the response is proportional to the amount of compound in the sample. This detector provides high sensitivity (ppb range) with linear response and reproducible results. The reduced sulfur gases normally found in effluent samples are hydrogen sulfide, carbonyl sulfide, carbon disulfide, methyl mercaptan, ethyl mercaptan, and dimethyl sulfide. This method will be used to determine compliance with Regulation 7: Odors, Section 303: Limit on Odorous Compounds, and the standards in Regulation 9: Inorganic Gaseous Pollutants, Rule 1: Sulfur Dioxide, Sections 302, 304.3, and 307 through 310.

  This is a new method. Laboratory Method 44: Determination of Reduced Sulfur Gases and Sulfur Dioxide in Effluent Samples by Gas Chromatographic Method was amended in September, 1998. Both methods address the same sources, the primary difference is that Method 44A is sensitive to the parts per billion (ppb) range, whereas existing Method 44 is sensitive only to the parts per million (ppm) range. Typical sources include petroleum refineries, solid waste disposal sites, and wastewater treatment facilities.

- **Method 45: Determination of Butanes and Pentanes in Polymeric Materials.** The butanes and pentanes present in the polymeric material are dissolved in toluene or any appropriate solvent. An internal standard such as hexane is added to the mixture and an aliquot is analyzed using a gas chromatograph equipped with a flame ionization detector. The percentage of the individual butane or pentane present in the sample is determined by comparison with standards prepared in the same matrix. This method will be used to determine the VOC content of raw polymeric materials subject to

Regulation 8: Organic Compounds, Rule 52: Polystyrene, Polypropylene, and Polyethylene Foam Product Manufacturing Operations.

On July 7, 1999, the Board of Directors adopted Regulation 8, Rule 52: Polystyrene, Polypropylene and Polyethylene Foam Product Manufacturing Operations. Method 45 is designed to measure compliance with Section 8-52-301, 302 and 303; standards for polystyrene foam products, polystyrene loose fill, and polypropylene and polyethylene products, respectively. It is built on existing South Coast Air Quality Management District Method 306-91, which is currently referenced in Rule 52. The difference is that new Method 45 measures butanes, which are used as blowing agents to expand polymeric foam, in addition to pentanes, which are measured by the South Coast method.

- **Method 46: Determination of the Composite Partial Pressure of Volatile Organic Compounds in Cleaning Solvents.** This method involves the identification and quantification of the volatile organic compounds (VOC) in the cleaning solvent by using a gas chromatograph equipped with a photoionization-flame ionization detector system. The weight percent of each VOC in the solvent is calculated and converted to mole fraction, which is then used to determine the partial pressure of the individual VOC component. The VOC composite partial pressure of the cleaning solvent is determined by taking the sum of the partial pressures of the individual VOC components. This method will be used to determine compliance with the standards in Regulation 8: Organic Compounds, Rule 20: Graphic Arts Printing and Coating Operations, Section 309: Cleaning Products Requirements.

  On March 3, 1999 the Board of Directors adopted amendments to Regulation 8, Rule 20: Graphic Arts Printing and Coating Operations. Those amendments imposed a standard for cleaning materials used in the printing industry based on the vapor pressure of the VOC in the cleaning material. The standards become effective January 1, 2000. When Rule 20 was amended, Method 46 was already under development, so this new test method is already properly referenced in the rule.

ECONOMIC IMPACTS

There are no economic impacts associated with the proposed amendments to Volume III of the Manual of Procedures. Although the accuracy and precision of the laboratory methods determines to what extent the standards in rules can be enforced, they are not standards in themselves. Consequently, economic impacts are limited to the costs of the laboratory methods for industry to self audit their compliance status, if they desire. None of the rules require a determination of compliance by the industries affected by the rules, and the costs of recordkeeping, monitoring, product reformulation and control equipment have already been considered during the adoption of those specific regulations.

California Health and Safety Code, Section 40728.5 requires an analysis of the socioeconomic impacts of rule amendments adopted that "will significantly affect air quality or emissions limitations." This requirement of Section 40728.5 is not applicable to the District adoption of these amendments, because the amendments do not alter or affect air quality or emissions limitations. They simply provide a mechanism to enforce existing standards.

California Health and Safety Code, Section 40920.6 requires an assessment of incremental cost effectiveness for one or more potential control options which achieve the emission reduction objectives of the proposed amendment. Section 40920.6 does not apply. There are no emission reduction objectives associated with the adoption of laboratory methodology. The standards for which this section of law apply have already undergone the appropriate economic analyses at the time of their adoption.

ENVIRONMENTAL IMPACTS

Adoption of the proposed amendments will not have any environmental impact. Laboratory methods are detailed means by which to enforce standards for which an environmental impact analysis has already been done, they do not set new standards or change existing standards. Therefore, the District has determined that these amendments to the Manual of Procedures are exempt from the provisions of the California Environmental Quality Act pursuant to State CEQA Guidelines, Section 15061, subd. (b)(3), and Section 15321. The District intends to file a Notice of Exemption pursuant to State CEQA Guidelines, Section 15062.

REGULATORY IMPACTS

Under California Health and Safety Code, Section 40727.2, upon adoption, amendment or repeal of air district regulations, a comparison of existing federal and district rules that affect the same equipment or source type is required. However, Section 40727.2 (g) states, "If a district's proposed new or amended rule or regulation does not impose a new emission limit or standard, or impose new or more stringent monitoring, reporting, or recordkeeping requirements, or if the proposed new or amended rule or regulation is a verbatim adoption or incorporation by reference of a federal New Source Performance Standard adopted pursuant to Section 111 of the Clean Air Act (U.S.C. 7411) or an airborne toxic control measure adopted by the state board pursuant to Section 39666, a district may elect to comply with subdivision 40727.2 (a) by preparing an alternative analysis demonstrating that the proposed new or amended rule or regulation falls within one or more of the categories specified in this subdivision."

CH&SC Section 40727 does not apply. Each of the elements that trigger this section of the law specifically speaks to direct requirements for industry affected by a regulation. Emission limitations, monitoring, recordkeeping and reporting requirements all have direct costs to industry. The methodology by which to determine compliance is not a

direct cost. Industry is required to be in compliance with adopted standards, and requirements to do certain tests or monitor for compliance by certain methods may be imposed. If so, those would be requirements within the rules, and would be subject to Section 40727, however the methods themselves are not.

RULE DEVELOPMENT HISTORY

On September 5, 1979, the Board of Directors recodified District regulations and first adopted a Manual of Procedures as a separate document from the rules and regulations. Since then, from time to time the Board has amended the MOP to incorporate new policy, procedures or methods or improve existing ones. Advances in analytical equipment to enable District staff to save time or to be more accurate in emission measurement, and new standards that require new procedures and methods are the primary reasons for MOP amendments.

On September 20, 1999, staff solicited written or verbal comments on these proposed amendments to Volume III of the MOP in lieu of scheduling a public workshop. In addition, the draft methods were published on the District's web site. Typically, commentors would be laboratory staff at other Districts, ARB, EPA, affected industries locally, and, in the case of products that will have to comply with new standards, at affected industries across the country. Because of the highly technical nature of the methods, comments tend to be few and commentors are easily able to discuss the proposal with District laboratory staff over the phone or via e-mail. To date, no comments have been received.

DISTRICT STAFF IMPACTS

Proposed Method 44A does not replace existing Method 44 due to the different sensitivities of the methods, however, where Method 44A is usable, it will require a greater expenditure, specifically because it uses more laboratory gases, but will reduce staff time spent doing the analysis. Consequently, staff anticipate a small reduction in overall costs associated with the adoption of this method.

Method 45 is a new method, and will be used to enforce standards in Rule 52 that go into effect June 1, 1999. Although a Method 45 analysis may take one lab employee one day, staff anticipate that due to the limited number of sources subject to Rule 52 in the Bay Area, there will be a maximum of 10 - 12 employee-days spent on analysis using this new method. These increased costs have previously been commented on in the staff report accompanying Rule 52.

Method 46 is more complex and time consuming than Method 45. Consequently, samples of cleaning products used in the graphic arts industry submitted for analysis under Method 46 will take up to two days to complete. However, additional samples can be run simultaneously, and samples can be saved for at least a short period of time to

increase efficiency. Typically, when new standards go into effect, for about one year there is a fairly significant expenditure of time made by District staff to document compliance, or lack of compliance, with the new standards. There are hundreds of Bay Area graphic arts facilities that will become subject to the new standards. However, cleaning products made specifically for the graphic arts industry are made by a limited number of companies. Consequently, District inspection staff will soon be able to recognize compliant products as they encounter them during subsequent inspections, and not have to re-sample them. Staff estimates that the time spent on Method 46 analysis will be approximately 30 employee-days during the year 2000 and no more than 15 - 20 employee-days in future years.

CONCLUSION

The laboratory procedures are proposed either because they are required for the enforcement of amended regulations or in order to incorporate advances in analytical equipment.

Pursuant to the California Health and Safety Code, Section 40727, regulatory amendments must meet findings of necessity, authority , clarity, consistency, non-duplication, and reference. The proposed amendments are:

> Required to enforce provisions of previously adopted Regulation 8, Rules 20 and 52 and to improve the sensitivity of an existing method.
>
> Authorized by the California Health and Safety Code Section 40000, 40001, 40702, and 40725 through 40728;
>
> Clear, in that the laboratory methods are written so that they can be understood by persons affected by them;
>
> Consistent with other District rules and test methods, and not in conflict with any state or federal law;
>
> Non-duplicative of other statutes, rules or regulation; and
>
> Are implementing, interpreting, or making specific the provisions of California Health and Safety Code Sections 40000 and 40702.

The proposed amendments have met all legal noticing requirements and interested parties have been notified. No comments have been received. District staff recommend adoption of the amendments to the Manual of Procedures, Volume III, Laboratory Methods 44A, 45 and 46.

JH:CD:DB:db
P:/ruledev/lab/2staffr.doc